

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

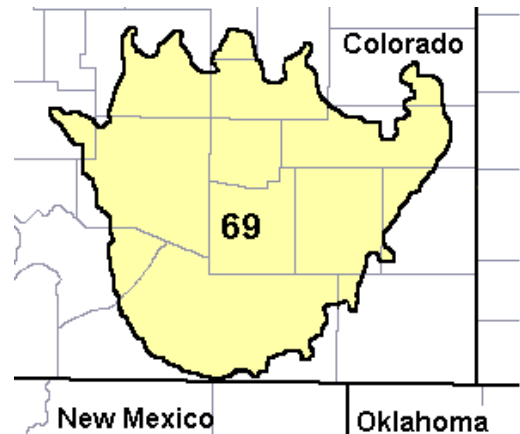
Site Name: Choppy Sands

Site ID: R069XY021CO

Major Land Resource Area: 69 – Upper Arkansas Valley
Rolling Plains

Physiographic Features

This site occurs on dunes and steep hills. There are many narrow ridges, sharp peaks, catsteps, and small blowouts associated with this site.



Landform: dune, hill, ridge

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	3600	6000
Slope (percent):	1	35
Water Table Depth (inches):	60	60
Flooding:		
Frequency:	none	none
Duration:	none	none
Ponding:		
Depth (inches):	0	0
Frequency:	none	none
Duration:	none	none
Runoff Class:	negligible	low

Climatic Features

The mean average annual precipitation varies from 10 to 14 inches per year depending on location and ranges from 5 inches to over 24 inches per year. Approximately 75 percent of the annual precipitation occurs during the growing season from mid-April to late-September. Snowfall can vary greatly from year to year and can range from 20 to 40 inches per year. Winds are estimated to average about 6 to 7 miles per hour annually. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 60 miles per hour.

The average length of the growing season is 155 days, but varies from 147 to 162 days. The average date of first frost in the fall is October 10, and the last frost in the spring is about May 5. July is the hottest month and January is the coldest. It is not uncommon for the temperature to exceed 100 degrees F during the summer. Summer humidity is low and evaporation is high. The winters are characterized with frequent northerly winds, producing severe cold with temperatures dropping to as low as -35 degrees F.

Site Type: Rangeland
MLRA: 69 – Upper Arkansas Valley Rolling Plains

Choppy Sands
R069XY021CO

Growth of native cool season plants begins about April 15 and continues to about June 1. Native warm season plants begin growth about May 1 and continue to about August 15. Regrowth of cool season plants occurs in September and October of most years, depending on moisture.

	<u>Minimum</u>	<u>Maximum</u>
Frost-free period (days):	147	162
Freeze-free period (days):	169	186
Mean Annual Precipitation (inches):	10	14

Average Monthly Precipitation (inches) and Temperature (°F):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.28	0.27	12.1	46.4
February	0.14	0.36	15.3	52.9
March	0.25	0.68	20.7	61.5
April	0.73	1.16	28.9	71.8
May	0.90	2.21	38.6	81.1
June	0.83	1.79	47.6	91.4
July	2.34	2.38	53.4	96.2
August	1.62	2.00	51.7	93.7
September	1.04	1.12	43.3	86.0
October	0.90	0.78	32.2	74.2
November	0.49	0.51	21.0	58.1
December	0.43	0.27	14.1	48.6

Climate Stations		Period	
Station ID	Location or Name	From	To
CO6763	Pueblo Army Depot	1971	2000
CO3828	Haswell	1922	2001
CO7287	Rush	1924	2001
CO4834	Las Animas	1930	2001

For detailed information visit the Western Regional Climate Center at <http://www.wrcc.dri.edu/> website.

Influencing Water Features

Wetland Description:	<u>System</u>	<u>Subsystem</u>	<u>Class</u>	<u>Sub-class</u>
None	None	None	None	None

Stream Type: None

Representative Soil Features

The soils of this site are very deep. Typically, they are excessively drained and have rapid or very rapid permeability. These soils formed in eolian deposits and alluvium, derived from mixed sources. They occur on hills, ridges and dunes. The available water capacity is typically very low to low. The soil surface layer ranges from 3 to 9 inches thick and is typically sand, loamy sand or loamy fine sand. The pH of these soils ranges from neutral to slightly alkaline in the surface and neutral to moderately alkaline in the substratum. The soil moisture regime is typically ustic aridic, but ranges to aridic in the driest areas of MLRA 69. The soil temperature regime is mesic.

The Historic Climax Plant Community (HCPC) should show slight to no evidence of rills. Water flow paths, if any, are broken, irregular in appearance or discontinuous. Wind scoured areas are inherent to this site and some soil movement may be noticeable on various landscape positions. Minor plant pedestalling may occur in these areas also. Overall, the soil surface should be stable and intact. Sub-surface soil layers are non-restrictive to water movement and root penetration.

Major soil series correlated to this ecological site include:
Dwyer, Tivoli, and Valent

Series that will be correlated to another MLRA when outdated surveys are updated:
Tivoli: these soils have a thermic temperature regime.

Other soil series that have been correlated to this site include: none

Parent Material Kind: eolian deposits, alluvium
Parent Material Origin: sedimentary
Surface Texture: sand, loamy sand, loamy fine sand
Surface Texture Modifier: none

Subsurface Texture Group: sandy
Surface Fragments $\leq 3''$ (% Cover): 0 to 15 percent
Surface Fragments $> 3''$ (%Cover): 0
Subsurface Fragments $\leq 3''$ (% Volume): 0 to 15 percent
Subsurface Fragments $> 3''$ (% Volume): 0

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	excessively	excessively
Permeability Class:	rapid	very rapid
Depth (inches):	60	60
Electrical Conductivity (mmhos/cm)*:	0	1
Sodium Absorption Ratio*:	0	5
Soil Reaction (1:1 Water)*:	6.6	8.4
Soil Reaction (0.1M CaCl₂)*:	6.4	8.0
Available Water Capacity (inches)*:	1.2	2.8
Calcium Carbonate Equivalent (percent)*:	0	15

*These attributes represent 0-40 inches in depth or to the first restrictive layer.

Plant Communities

Ecological Dynamics of the Site:

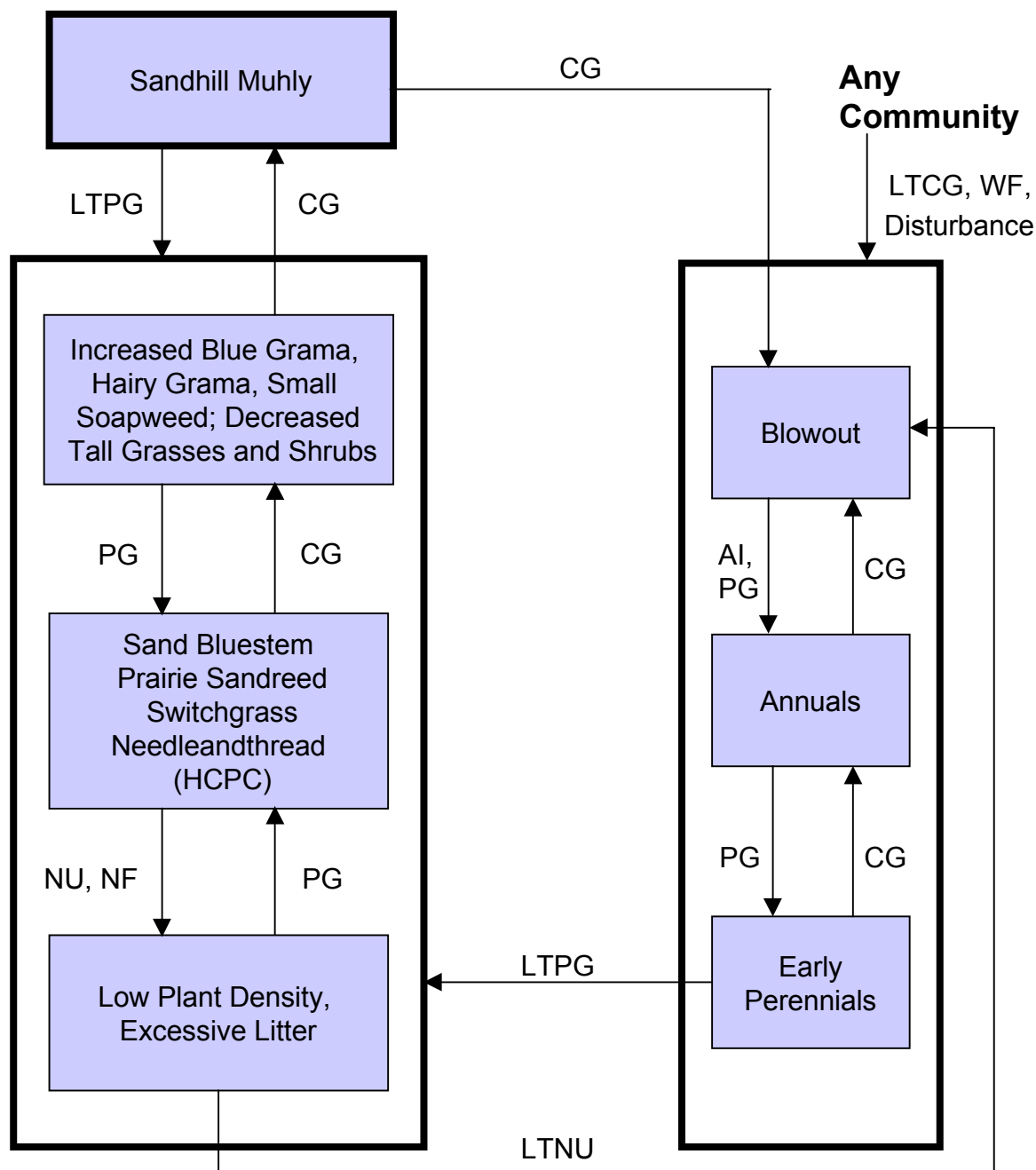
Continuous grazing without adequate recovery opportunities following each grazing event during the growing season will initially cause blue grama, hairy grama and small soapweed to increase. Species such as sand bluestem, prairie sandreed, switchgrass, western sandcherry, leadplant and palatable forbs will decrease in frequency and production. Sandhill muhly will continue to increase under continuous grazing. Non-use, continuous grazing, wildfire, brush management or any type of physical disturbance can lead to serious erosion problems (blowouts, wind scoured areas) on these fragile soils.

Warmer and drier climatic conditions exist in the central portion of MLRA-69. This area includes the eastern half of Pueblo county, northern Otero, extreme northwestern Bent, western edge of Kiowa, southern edge of Lincoln and all of Crowley County. These conditions are primarily caused by a rain shadow effect from the southern Rocky Mountains. Evapotranspiration rates (atmospheric demand) will be higher in this area of MLRA-69. Total annual production will typically be lower.

The historic climax plant community (description follows the plant community diagram) has been determined by study of rangeland relic areas, areas protected from excessive disturbance, seasonal use pastures, short duration/time controlled grazing and historical accounts.

The following is a diagram that illustrates the common plant communities that can occur on the site and the transition pathways (arrows) among communities. Bold lines surrounding each plant community or communities represent ecological thresholds. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



AI - animal impact, **CG** - continuous grazing without adequate recovery period, **HCPC** - Historic Climax Plant Community, **LTCG** - long term continuous grazing (>25 yrs), **LTNU** - long term non-use (>25 yrs), **LTPG** - long term prescribed grazing (>25 yrs), **NF** - no fire, **NU** - non-use, **PG** - prescribed grazing with adequate recovery period, **WF** - wildfire

Plant Community Composition and Group Annual Production

			Sand Bluestem, Praire Sandreed, Switchgrass, Needleandthread (HCPG)		
COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES			1	805 - 978	70 - 85
sand bluestem	Andropogon hallii	ANHA	1	230 - 288	20 - 25
prairie sandreed	Calamovilfa longifolia	CALO	1	173 - 230	15 - 20
switchgrass	Panicum virgatum	PAVI2	1	58 - 173	5 - 15
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	58 - 115	5 - 10
little bluestem	Schizachyrium scoparium	SCSC	1	35 - 81	3 - 7
Indiangrass	Sorghastrum nutans	SONU2	1	35 - 58	3 - 5
blue grama	Bouteloua gracilis	BOGR2	1	12 - 58	1 - 5
sand dropseed	Sporobolus cryptandrus	SPCR	1	12 - 58	1 - 5
blowout grass	Redfieldia flexuosa	REFL	1	12 - 35	1 - 3
hairy grama	Bouteloua hirsuta	BOHI2	1	12 - 35	1 - 3
Indian ricegrass	Achnatherum hymenoides	ACHY	1	12 - 23	1 - 2
sandhill muhly	Muhlenbergia pungens	MUPU2	1	12 - 23	1 - 2
prairie junegrass	Koeleria macrantha	KOMA	1	0 - 23	0 - 2
sand paspalum	Paspalum setaceum	PASE5	1	0 - 23	0 - 2
sideoats grama	Bouteloua curtipendula	BOCU	1	0 - 23	0 - 2
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 12	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	12 - 23	1 - 2
sand flatsedge	Cyperus schweinitzii	CYSC3	1	0 - 23	0 - 2
needleleaf sedge	Carex duriuscula	CADU6	1	0 - 12	0 - 1
other perennial grasses		2GP	1	12 - 58	1 - 5
FORBS			2	115 - 173	10 - 15
lemon scurfpea	Psoralidium lanceolatum	PSLA3	2	12 - 35	1 - 3
annual buckwheat	Eriogonum annuum	ERAN4	2	12 - 23	1 - 2
silky prairie clover	Dalea villosa	DAVI	2	12 - 23	1 - 2
Nuttall's evolvulus	Evolvulus nuttallianus	EVNU	2	0 - 23	0 - 2
bigtop dalea	Dalea enneandra	DAEN	2	0 - 12	0 - 1
bush morningglory	Ipomoea leptophylla	IPLE	2	0 - 12	0 - 1
dotted gayfeather	Liatris punctata	LIPU	2	0 - 12	0 - 1
groundplum milkvetch	Astragalus crassicaupus	ASCR2	2	0 - 12	0 - 1
hairy goldaster	Heterotheca villosa	HEVI4	2	0 - 12	0 - 1
heliotrope	Heliotropium convolvulaceum	HECO5	2	0 - 12	0 - 1
ironplant goldenweed	Machaeranthera pinnatifida ssp. pinnatifida var. pinnatifida	MAPIP4	2	0 - 12	0 - 1
Missouri goldenrod	Solidago missouriensis	SOMI2	2	0 - 12	0 - 1
narrowleaf penstemon	Penstemon angustifolius	PEAN4	2	0 - 12	0 - 1
prairie coneflower	Ratibida columnifera	RACO3	2	0 - 12	0 - 1
prairie spiderwort	Tradescantia occidentalis	TROC	2	0 - 12	0 - 1
purple prairie clover	Dalea purpurea var. purpurea	DAPUP	2	0 - 12	0 - 1
snowball sand verbena	Abronia fragrans	ABFR2	2	0 - 12	0 - 1
stiff sunflower	Helianthus pauciflorus ssp. pauciflorus	HEPAP2	2	0 - 12	0 - 1
tenpetal blazingstar	Mentzelia decapetala	MEDE2	2	0 - 12	0 - 1
Texas croton	Croton texensis	CRTE4	2	0 - 12	0 - 1
veiny dock	Rumex venosus	RUVE2	2	0 - 12	0 - 1
western ragweed	Ambrosia psilostachya	AMPS	2	0 - 12	0 - 1
whiteflower gilia	Ipomopsis longiflora ssp. longiflora	IPLOL	2	0 - 12	0 - 1
wooly Indianwheat	Plantago patagonica	PLPA2	2	0 - 12	0 - 1
wormwood	Artemisia dracunculus	ARDR4	2	0 - 12	0 - 1
other perennial forbs		2FP	2	12 - 35	1 - 3
SHRUBS			3	58 - 173	5 - 15
western sandcherry	Prunus pumila var. besseyi	PRPUB	3	23 - 58	2 - 5
leadplant	Amorpha canescens	AMCA6	3	12 - 35	1 - 3
sand sagebrush	Artemisia filifolia	ARFI2	3	12 - 35	1 - 3
small soapweed	Yucca glauca	YUGL	3	12 - 23	1 - 2
brittle cactus	Opuntia fragilis	OPFR	3	0 - 12	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 12	0 - 1
prairie rose	Rosa arkansana	ROAR3	3	0 - 12	0 - 1
purple pincushion	Escobaria vivipara var. vivipara	ESVIV	3	0 - 12	0 - 1
skunkbush sumac	Rhus trilobata	RHTR	3	0 - 12	0 - 1
spreading buckwheat	Eriogonum effusum	EREF	3	0 - 12	0 - 1
other shrubs		2SHRUB	3	12 - 35	1 - 3
	Annual Production lbs./acre		LOW RV* HIGH		
	GRASSES & GRASS-LIKES		435 - 891 - 1050		
	FORBS		110 - 144 - 175		
	SHRUBS		55 - 115 - 175		
	TOTAL		600 - 1150 - 1400		

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. *RV = Representative value.

Plant Community Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition table shown above has been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities will be determined by the decision makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Sand Bluestem, Prairie Sandreed, Switchgrass, Needleandthread Plant Community

This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC). This plant community evolved with grazing by large herbivores, is well suited for grazing by domestic livestock and can be found on areas that are properly managed with grazing that allows adequate recovery periods following each grazing occurrence during the growing season.

The plant community consists chiefly of tall warm season grasses. Principle dominants are sand bluestem, prairie sandreed, switchgrass and needleandthread. Sub-dominant grasses include little bluestem, blue grama, hairy grama and Indiangrass. Important forbs and shrubs include lemon scurfpea, silky prairie clover, bigtop dalea, leadplant and sandcherry. The potential vegetation is about 70-85% grasses and grass-like plants, 10-15% forbs and 5-15% woody plants.

Prescribed grazing that allows for adequate recovery periods after each grazing event and proper stocking will maintain this plant community. Continual or repeated spring grazing and summer deferment will reduce the cool season component of this plant community and increase the warm season component. Spring deferment and continual summer grazing will increase the cool season component and decrease the warm season component of this plant community.

This community is resistant to many things except continuous grazing, plowing and development into urban or other uses. Plant litter is properly distributed with very little movement off-site and natural plant mortality is very low. Nutrient cycle, water cycle, energy flow and community dynamics are all functioning and intact. Extensive and diverse rooting systems are present. Carbon sequestration above and below ground is excellent. If continually grazed and/or over stocked to the point of leaving little stubble or litter, wind erosion will become a major concern.

Production in this community can vary from 600 to 1400 pounds of air-dry vegetation per acre per year depending on the weather and will average 1150 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6905

Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	22	35	15	10	3	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods will move this plant community toward the *Increased Blue Grama, Hairy Grama, Small Soapweed; Decreased Tall Grasses and Shrubs Plant Community*. Reduced production and erosion are a concern.

- Non-use and lack of fire will shift this plant community to the *Low Plant Density, Excessive Litter Plant Community*.
- Prescribed grazing that allows for adequate recovery opportunity following each grazing event and proper stocking will maintain the *Sand Bluestem, Prairie Sandreed, Switchgrass, Needleandthread Plant Community (HCPC)*.

Increased Blue Grama, Hairy Grama, Small Soapweed; Decreased Tall Grasses and Shrubs Plant Community

This plant community evolves with continuous grazing resulting from lack of adequate recovery periods during the growing season or throughout the year. Sand bluestem, yellow Indiangrass, switchgrass, prairie sandreed, purple prairieclover, western sandcherry and leadplant have decreased but are still present in small amounts. Blue grama, hairy grama, needleandthread and small soapweed have increased and dominate the community. Sand dropseed, red threeawn, sandhill muhly, lemon scurfpea, hairy goldaster, croton, western ragweed, tenpetal blazingstar, and groundplum milkvetch have also increased.

This plant community is relatively stable but at risk of losing key tall grass species, palatable forbs, western sandcherry and leadplant. Nutrient cycle, water cycle and energy flow have been impaired do to reduced production, shift in root structure and species composition. Less litter is being produced. Small blowouts or wind scoured areas can be forming at this stage. This is an early stage of desertification.

Production can vary from 300 to 750 pounds of air-dry vegetation per acre per year and will average 550 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6907

Growth curve name: Warm season dominant; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	30	40	20	5	0	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods between grazing events will shift this plant community across an ecological threshold to the *Sandhill Muhly Plant Community*. Decreased production and increased erosion are concerns.
- Prescribed grazing that allows for adequate recovery periods following each grazing event will move this plant community to the *Sand Bluestem, Prairie Sandreed, Switchgrass, Needleandthread Plant Community (HCPC)*.

Low Plant Density, Excessive Litter Plant Community

This plant community occurs when grazing is removed for long periods of time in the absence of fire. Plant composition is similar to the HCPC, however, in time, individual species production and frequency will be lower. Much of the nutrients are tied up in excessive litter. The semiarid environment and the absence of animal traffic to break down litter slows nutrient cycling. Aboveground litter also limits sunlight from reaching plant crowns. Many plants, especially bunchgrasses die off. Thick litter and absence of grazing or fire reduce seed germination and establishment. This plant community will change rapidly with prescribed grazing which allows animal impact and adequate recovery periods between grazing events.

Advanced stages of non-use or rest, will place this community at risk of losing many important native species. Long-term non-use/rest (greater than 25 years), will cause plant decadence and mortality to increase and erosion (blowouts, wind scoured areas) may eventually occur if bare ground increases. Once this happens it will require increased energy input in terms of practice cost and management to bring back.

Production can vary from 150 to 1100 pounds of air-dry vegetation per acre per year.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6906

Growth curve name: Warm season dominant, cool season sub-dominant, excess litter; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	25	30	15	10	3	2	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Long-term non-use/rest (greater than 25 years) can move this plant community across an ecological threshold causing accelerated erosion (*Blowout*).
- Prescribed grazing that allows for adequate recovery periods following each grazing event, if applied soon enough, will move this plant community toward the *Sand Bluestem, Prairie Sandreed, Switchgrass, Needleandthread Plant Community (HCPC)*. This transition can happen in a relatively short time frame.

Sandhill Muhly Plant Community

This plant community is established under historic continuous grazing. Sandhill muhly has increased to the point of being the dominant species. Sand dropseed, red threeawn, blowout grass, and lemon scurfpea have also increased. Needleandthread, Indian ricegrass and little bluestem have decreased to remnant amounts. Sand bluestem, Indiangrass, switchgrass, prairie sandreed, western sandcherry and leadplant have been removed.

Species diversity and overall production are reduced significantly. Litter levels are low. Bare ground has increased and blowouts are forming or enlarging. Carbon reserves have been severely depleted. Community dynamics, nutrient cycle, water cycle and energy flow has been severely impaired. Desertification is advanced.

Production varies from 100 to 350 pounds of air-dry vegetation per acre per year and will average 250 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6907

Growth curve name: Warm season dominant; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	30	40	20	5	0	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods following each grazing event will cause this plant community to cross an ecological threshold and form *Blowouts*. Severe erosion is a major concern.

- Long-term prescribed grazing with adequate recovery periods following each grazing event will eventually move this plant community to the *Sand Bluestem, Prairie Sandreed, Switchgrass, Needleandthread Plant Community (HCPC)* or associated successional plant communities, assuming an adequate seed/vegetative source is available. This transition may take greater than 25 years depending on the size of the area, proximity to seed source and remnant species present.

Blowout

Long term continuous grazing and/or heavy stocking with continuous grazing, disturbance (tillage, vehicle traffic, etc.) and/or wildfires bring about this condition. This condition is not stable. It consists of bare soil that is continually eroded by wind. Blowouts will continue to increase in size if adequate recovery periods and reclamation efforts are not applied. Desertification is well advanced.

- Animal impact and prescribed grazing will begin to heal this plant community and move it toward the *Annuals Plant Community*.

Annuals Plant Community

This early succession plant community can either be the result of continuous grazing applied to an early perennial plant community, or the result of controlled short-term animal impact and prescribed grazing applied to a blowout. Production can vary greatly depending on the plant density and weather conditions in any year. Cheatgrass, Japanese brome, kochia, Russian thistle, sunflower, pigweed, sandbur, sixweeks fescue and annual buckwheat are common. Wind erosion is a concern.

Production can vary from 0 to 200 pounds per acre of air-dry vegetation per year.

- Continuous grazing without adequate recovery opportunities will shift this plant community toward the *Blowout* condition.
- Prescribed grazing that allows adequate recovery periods between grazing events will move this plant community toward the *Early Perennials Plant Community*.

Early Perennials Plant Community

This plant community evolves with long term continuous grazing from a more advanced plant community or with prescribed grazing from the annuals plant community. Blowout grass, Indian ricegrass, sandhill muhly, needleandthread and lemon scurfpea are some of the first perennials to occupy this community. Wind erosion remains a concern.

Production can vary from 50 to 200 pounds per acre of air-dry vegetation per year.

- Continuous grazing without adequate recovery periods between grazing events will move this plant community toward the *Annuals Plant Community* and eventually to the *Blowout* condition.
- Long-term prescribed grazing that allows adequate recovery periods following each grazing event will eventually move this plant community toward the *Sand Bluestem, Prairie Sandreed, Switchgrass, Needleandthread Plant Community (HCPC)* or associated successional plant communities, assuming an adequate seed/vegetative source is available.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

The variety of grasses, forbs, and shrubs found on this ecological site in the various plant communities provides habitat for a wide range of wildlife species. Historic large grazers that influenced these plant communities were bison, elk, and pronghorn. Changes over time have resulted in the loss of bison, the reduction in elk numbers, and pronghorn population swings. Domestic grazers now share these habitats with wildlife. The grassland communities of eastern Colorado are home to many bird species. Changes in the composition of the plant community when moving from the HCPC to other communities on this ecological site may result in dramatic species shifts in the bird community. Because of a lack of permanent water, fish and many amphibians are not expected on this ecological site. Mule and white-tailed deer may use this ecological site, however the shrub cover is too low to expect more than occasional use. The gray wolf, black-footed ferret, and wild bison used this ecological site in historic times. The wolf and ferret are thought to be extirpated from Eastern Colorado. Bison are currently found only as domestic livestock.

Sand Bluestem, Prairie Sandreed, Switchgrass, Needleandthread Plant Community (HCPC)

The grasses, forbs, and shrubs in this plant community provide habitat for reptiles such as western rattlesnake and bullsnake. The structural diversity in the plant community on this site provides habitat for Cassin's and Brewer's sparrow, lark bunting, scaled quail, and ferruginous and Swainson's hawks. The combination of mid-tall grasses and shrubs provides habitat for lesser prairie chicken in the eastern part of this ecological site. Small mammals such as white-tailed jackrabbit, badger, swift fox, and several species of mice are common in this plant community. Pronghorn is a typical ungulate found in this community.

Increased Blue Grama, Hairy Grama, Small Soapweed, Decreased Tall Grasses and Shrubs Plant Community

All HCPC species are expected in this plant community, however, the loss of some of the vegetative structural diversity in this plant community makes it less attractive to many HCPC species.

Low Plant Density, Excessive Litter; Sandhill Muhly; Blowout; Annuals; and Early Perennials Plant Communities

As these communities develop into an open landscape the wildlife species will shift away from HCPC species and toward the species that prefer unvegetated areas and short plants. Texas short-lizard, six-lined racerunner, and black-tailed jackrabbit would be expected more frequently here than in the HCPC. In addition, mountain plover, black-tailed prairie dog, and burrowing owl might use these communities where slopes are less than 5% and vision is unobstructed.

Animal Preferences (Quarterly – 1,2,3,4[†])

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses and Grass-like							
blowout grass	U U D U	N N N N	U U D U	N N N N	N N N N	U U D U	U U D U
blue grama	U D P U	D P P D	U D P U	D P P D	D P P D	U D P U	U D P U
hairy grama	U D P U	D P P D	U D P U	D P P D	D P P D	U D P U	U D P U
Indian ricegrass	D P U D	N P N D	D P U D	N P N D	N P N D	D P U D	D P U D
Indiangrass	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
little bluestem	U D D U	N D N N	U D D U	N D N N	N D N N	U D D U	U D D U
needleandthread	U D U D	N D N U	U D U D	N D N U	N D N U	U D U D	U D U D
needleleaf sedge	U D U D	U P N D	U D U D	U D U D	U D U D	U D U D	U D U D
prairie junegrass	U D U D	N D N U	U D U D	N D N U	N D N U	U D U D	U D U D
prairie sandreed	U D D U	U D U U	U D D U	U U D U	U U D U	U D D U	U D D U
red threeawn	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
sand bluestem	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
sand dropseed	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N
sand paspalum	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N
sandhill muhly	N U N N	N N N N	N U N N	N N N N	N N N N	N U N N	N U N N
sideoats grama	U D P U	U P D U	U D P U	U P D U	U P D U	U D P U	U D P U
sun sedge	U D U D	U P N D	U D U D	U D U D	U D U D	U D U D	U D U D
switchgrass	U D D U	U D U U	U D D U	N N N N	N N N N	U D D U	U D D U
tall dropseed	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N
Forbs							
annual buckwheat	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
bigtop dalea	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P U
bush morningglory	U D P U	U D D U	U D P U	U D D U	U D D U	U D P U	U D D U
Carolina puccoon	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
dotted gayfeather	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
groundplum milkvetch	U D U U	U D D U	U D U U	U D D U	U D D U	U D U U	U D D U
hairy goldaster	U U D U	N N N N	U U D U	N N N N	N N N N	U U D U	N N N N
heliotrope	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
ironplant goldenweed	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
lemon scurfpea	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
Missouri goldenrod	U U D U	N U U N	U U D U	N U U N	N U U N	U U D U	N U U N
narrowleaf penstemon	U D U U	U P P U	U D U U	U P P U	U P P U	U D U U	U P P U
Nuttall's evolvulus	U U D U	U D D U	U U D U	U D D U	U D D U	U U D U	U D D U
prairie coneflower	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
prairie spiderwort	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
purple prairie clover	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P U
silky prairie clover	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P U
snowball sand verbena	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
stiff sunflower	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U
tenpetal blazingstar	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
Texas croton	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
veiny dock	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
western ragweed	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
whiteflower gilia	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
woolly Indianwheat	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
wormwood	N N U N	N U U N	N N U N	N U U N	N U U N	N N U N	N N U N
Shrubs							
brittle cactus	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
leadplant	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U
plains pricklypear	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
prairie rose	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U
purple pincushion	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
sand sagebrush	U N N U	U N N U	U N N U	U N N U	U N N U	U N N U	U N N U
skunkbush sumac	D U U D	D U U D	D U U D	D U U D	D U U D	D U U D	D U U D
small soapweed	D N N D	D U U D	D N N D	D U U D	D U U D	D N N D	D U U D
spreading buckwheat	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
western sandcherry	D P P D	D U U D	D P P D	P U D P	D U U D	D P P D	P U U P

N = not used; U = undesirable; D = desirable; P = preferred; T = toxic

[†] Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions however, *continuous grazing is not recommended*. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity.

Plant Community	Production (lbs./acre)	Stocking Rate (AUM/acre)
Sand Bluestem, Prairie Sandreed, Switchgrass, Needleandthread (HCPC)	1150	0.36
Increased Blue/Hairy Grama, Soapweed, Decreased Tall Grasses/Shrubs	550	0.17
Sandhill Muhly	250	0.08
Low Plant Density, Excessive Litter	*	*

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangelands in this area provide yearlong forage under prescribed grazing for cattle, sheep, horses and other herbivores. During the dormant period, livestock may need supplementation based on reliable forage analysis.

* Highly variable; stocking rate needs to be determined on site.

Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group A. Infiltration and runoff potential for this site ranges from high to moderate. Water transmission through group A soils is normally greater than 0.30 inches per hour. Runoff is expected to occur only during the most intense storms (refer to NRCS Section 4, National Engineering Handbook (NEH-4) for runoff quantities and hydrologic curves).

Recreational Uses

This site provides hunting, hiking, photography, bird watching and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

No appreciable wood products are present on the site.

Other Products

None noted.

Supporting Information

Associated Sites

- (069XY019CO) – Sands (formerly Deep Sands)
- (069XY026CO) – Sandy (formerly Sandy Plains)

Similar Sites

- (069XY019CO) – Sands (formerly Deep Sands)
[occurs on gentler slopes, more sand sagebrush prevalent]
- (069XY031CO) – Sandy Bottomland
[occurs on gently sloping terraces adjacent to drainages]

Inventory Data References

Information presented here has been derived from NRCS clipping data, numerous ocular estimates and other inventory data. Field observations from experienced range trained personnel were used extensively to develop this ecological site description. Specific data information is contained in individual landowner/user case files and other files located in county NRCS field offices.

Those involved in developing this site description include: Ben Berlinger, Rangeland Management Specialist, NRCS; Scott Woodall, Rangeland Management Specialist, NRCS; Lee Neve, Soil Scientist, NRCS; Julie Elliott, Rangeland Management Specialist, NRCS; Terri Skadeland, Biologist, NRCS.

State Correlation

This site is specific to Colorado.

Field Offices

Colorado Springs, Cheyenne Wells, Eads, Holly, Hugo, Lamar, Pueblo, Rocky Ford, Simla, Springfield, Trinidad

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (<http://hpcc.unl.edu>)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (<http://wcc.nrcs.usda.gov>)

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Site Description Approval

/s/

03/25/2004

State Range Management Specialist

Date